

NEW RECORDS OF NEOGASTROPOD MOLLUSCA FROM THE KERMADEC ISLANDS

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Abstract. The following species are new additions to the Kermadec Island molluscan fauna: *Nassarius nodiferus* (Powys), *N. himeroessa* (Melvill & Standen), *Neocancilla takiisaoi* (Kuroda), *Vexillum (Costellaria) sculptile* (Reeve), *V. (C.) castum* (H. Adams), and *V. (C.) angustissimum* (E. A. Smith) from the tropical Indo-Pacific; *Phos hirasei* (Sowerby) and *Ziba cf. rehderi* (Webb) from Japan; *Z. cernohorskyi* Rehder & Wilson from Pitcairn Island; and *Cancilla strangei* (Angas) and *Microvoluta royana* (Iredale) from Australia. *Ziba kermadecensis* n. sp. is a new member of the family Mitridae from the Kermadec Islands.

Through the courtesy of the Department of Molluscs, National Museum of New Zealand (NMNZ), I have received for examination specimens belonging to five neogastropod families. These specimens have been collected in the Kermadec Islands during October 1975 and September 1976 by museum expeditions on R.V. "Acheron".

The molluscan fauna of the Kermadec Islands has been reported upon by Iredale (1910, 1912), Oliver (1915) and Powell (1958, 1967). Kermadec Island Conidae have also been described and illustrated by the author (Cernohorsky 1976). Details of geography and topography may be found in Iredale, Oliver and Powell (op.cit.).

From previous accounts and material available in museums, we find that the Kermadec Island marine molluscan fauna comprises a mixture of tropical Indo-Pacific, New Zealand, and Australian elements with a moderately high proportion of endemics.

ORDER NEOGASTROPODA

Family BUCCINIDAE

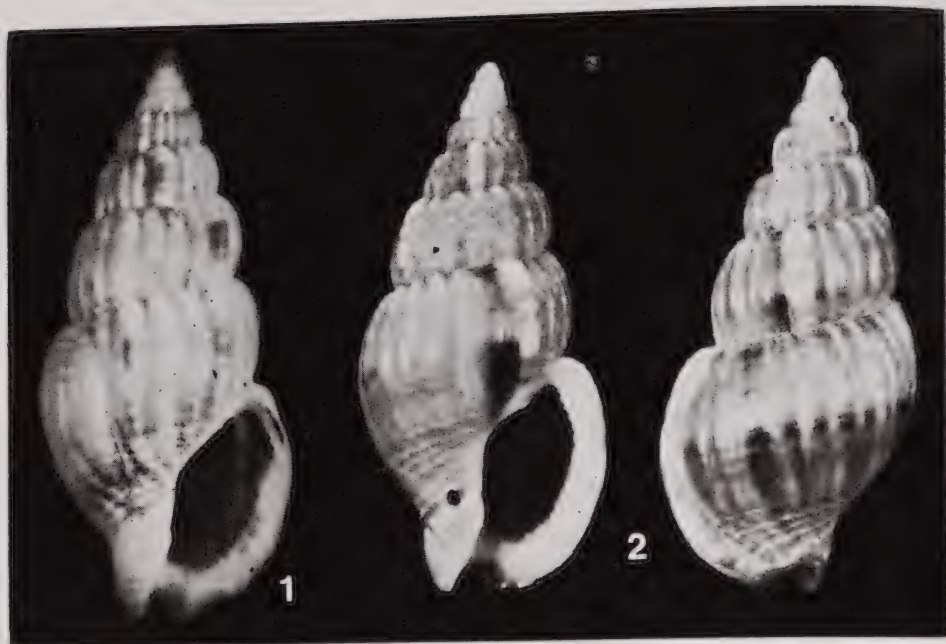
Genus *Phos* Montfort, 1810

Phos Montfort, 1810, Conchyl. Syst. 2: 495. Type species by OD *Murex senticosus* Linnaeus, 1758. Recent, Indo-Pacific.

Phos hirasei Sowerby, 1913 (Figs. 1, 2)
1913. *Phos hirasei* Sowerby, Ann. Mag. Nat. Hist. (8), 11: 558, pl. 9, fig. 2; 1936 Hirase, Coll. Jap. shells ed. 5: 75, pl. 105, fig. 14; 1960 Azuma, Cat. Moll. Tosa Prov. Japan, p. 40; 1961 Habe, Col. illust. shells Japan 2: 61, pl. 31, fig. 7.

TYPE LOCALITY: Kii, Japan.

Material examined: BS 440, 29°16'S, 177°49.3'W, S.E. Chanter I, Raoul I, 512-585 m; 1 specimen and 3 fragments.



Figs. 1, 2. *Phos hirasei* Sowerby. 1. Holotype BMNH, length 38.0 mm. 2. Specimen from S.E. Chanter I., Raoul I., Kermadec Is, 512-585 m; length 18.2 mm.

The Kermadec I record is the first record of this species from outside Japan. The species has characteristic axial ribs which appear to be clasping the sutures and the whitish varices have 2-3 narrow brown bands.

The holotype of *Phos hirasei* is in the British Museum (Nat. Hist.), London, No. 1914.1.7.294., length 38.0 mm, width 17.0 mm (Fig. 1).

Family NASSARIIDAE

Genus *Nassarius* Duméril, 1806

Nassarius Duméril, 1806, Zool. analyt. p. 166. Type species by SM (Froriep, 1806) *Buccinum arcularia* Linnaeus, 1758. Recent. Indo-Pacific.

Nassarius nodiferus (Powys, 1835)

(Fig. 3)

1835. *Nassa nodifera* Powys, Proc. Zool. Soc. Lond. p. 95.

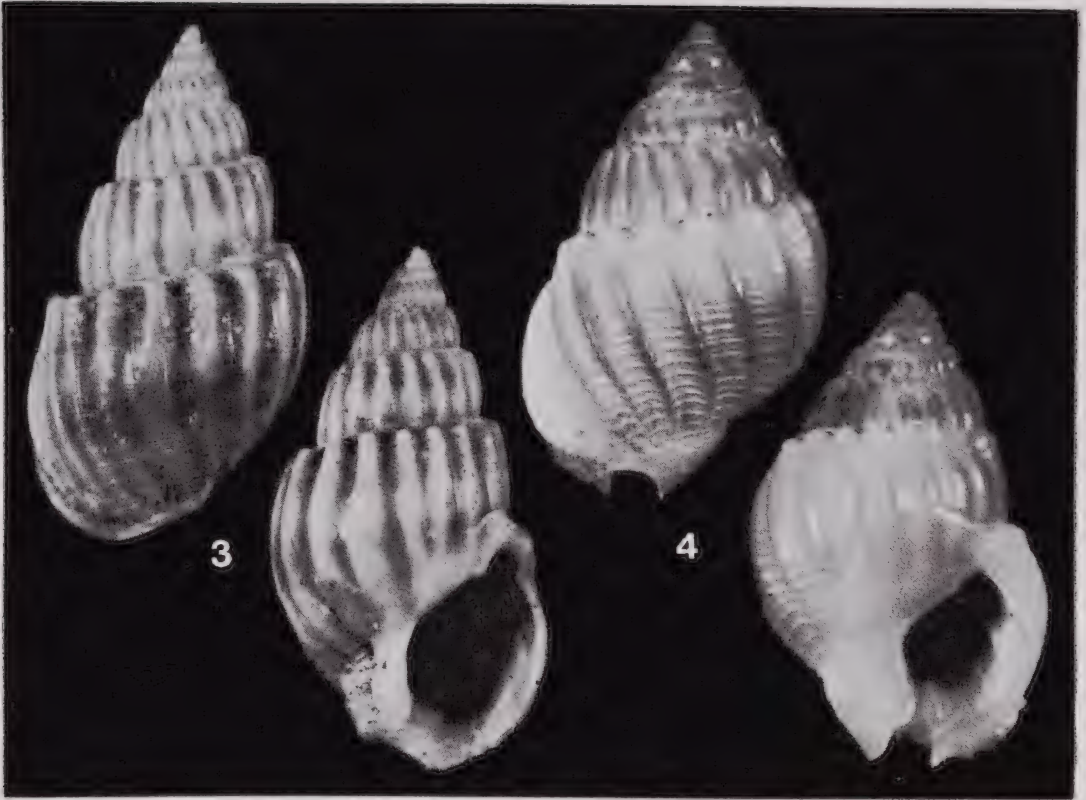
1972. *Nassarius (Niotha) nodiferus* (Powys), Cernohorsky, Rec. Auckland Inst. Mus. 9: 153, figs. 69, 70; 1975 Cernohorsky, Rec. Auckland Inst. Mus. 12: 222, fig. 23 (figd. syntype).

TYPE LOCALITY: Gallapagos and Panama = error.

DISTRIBUTION: From Mauritius to China and the New Hebrides, Kermadec Is (new record).

Material examined: BS 438, 29°14.7'S, 177°49.4'W, S.E. Nugent I, Raoul I, 146-165 m; 11 specimens. BS 434, 29°12.7'S, 177°56.1'W, Fleetwood Bluff, Raoul I, 135 m; 4 specimens and 1 fragment.

All specimens were dredged dead, indicating that the species probably does not live at the depth indicated. All Kermadec I specimens lack the fully formed lip of mature individuals.



Figs. 3, 4. *Nassarius nodiferus* (Powys). S.E. Nugent I, Raoul I, Kermadec Is, 146-165 m; length 26.4 mm. 4. *N. himeroessa* (Melvill & Standen), E. Chanter I, Raoul I, Kermadec Is, 366-402 m; length 6.4 mm.

This may be the same species as recorded by Iredale (1910) and Oliver (1915) under the name "*Arcularia scalaris* (A. Adams, 1852)" [non Borson, 1825].

Subgenus *Niotha* H. & Adams, 1853

Niotha H. & A. Adams, 1853, Gen. Rec. Moll. 1: 117. Type species by SD (Cossman, 1901) *Nassa cumingii* A. Adams, 1852 = *Buccinum conoidale* Deshayes in Bélanger, 1832. Recent, Indo-Pacific.

Nassarius (Niotha) himeroessa (Melvill & Standen, 1903) (Fig. 4)

1903. *Nassa (Alectryon) himeroessa* Melvill & Standen, Ann. Mag. Nat. Hist. (7), 12: 306, pl. 22, fig. 7.

1925. *Nassa innocens* Thiele, Wiss. Ergeb. deut. Tief. Exp. "Valdivia" 17: 183, pl. 20, fig. 12.

TYPE LOCALITY: Gulf of Oman, 7-156 fathoms (13-285 m) (*himerossa*): near Dar-es-Salaam, 6°35'S and 39°36'E, 404 m (*innocens*).

DISTRIBUTION: From the Persian Gulf to East Africa, Malaysia and the Philippines, Kermadec Is (new record).

Material examined: BS 441, 29°15.5'S, 177°50'W, E. Chanter I, Raoul I, 366-402 m; 8 specimens. BS 442, 29°16.5'S, 177°49.5'W, S.E. Chanter I, Raoul I, 512-549 m; 1 specimen.

The Kermadec I record represents an appreciable eastward range-extension from the Philippine Is, but the absence of the species in intervening areas is most probably due to the paucity of deep-water dredgings.

Two syntypes of *N. himeroessa* are in the British Museum (Nat. Hist.), London, No. 1903.12.15.69-70., dimensions of one syntype length 4.4 mm. The holotype of *N. innocens* is in the Zoological Museum, Humboldt University, Berlin, length 6.3 mm. The largest Kermadec I specimen measured 6.4 mm in length.

Family MITRIDAE

Genus *Cancilla* Swainson, 1840

Cancilla Swainson, 1840, Treat. Malac. pp. 130, 320. Type species by SD (Herrmannsen, 1846) *Tiara isabella* Swainson, 1831. Recent, Indo-Pacific.

Subgenus *Domiporta* Cernohorsky, 1970

Cancilla (Domiporta) strangei (Angas, 1867) (Fig. 5)

1867. *Mitra (Cancilla) strangei* Angas, Proc. Zool. Soc. Lond. p. 110, pl. 13, fig. 4.

1877. *Mitra franciscana* Tenison-Woods, Proc. R. Soc. Tasmania for 1876: 133.

1912. *Mitra nodostaminea* Hedley, Rec. Austral. Mus. 8 (3): 150, pl. 43, fig. 35.

1951. *Mitra tasmantis* Laseron, Rec. Austral. Mus. 22 (4): 341, textfig. 3.

TYPE LOCALITY: Middle harbour, Port Jackson, N.S.W., Australia (*strangei*); Tamar Heads, Tasmania, Australia (*franciscana*); off Port Kembla, N.S.W., Australia, 63-75 fathoms (115-137 m) (*nodostaminea*); Twofold Bay, N.S.W., Australia, 50-70 fathoms (92-128 m) (*tasmantis*).

DISTRIBUTION: From Tasmania to Sth. Queensland, Australia, Kermadec Is (new record).

Material examined: Raoul I, Kermadec Is, 83 m (ex-"Galathea" Expedition).

The specimen from Raoul I is a senile individual with a coarse spiral sculpture. Specimens with fine and coarse, often nodulose spiral sculpture occur throughout the species distributional range.

Genus *Neocancilla* Cernohorsky, 1966

Neocancilla Cernohorsky, 1966, Veliger 9 (2): 110. Type species by OD *Voluta papilio* Link. 1807. Recent, Indo-Pacific.

Neocancilla takiisaoi (Kuroda, 1959) (Figs. 6, 7)

1958. *Mitra taki-isaoi* Kuroda, Jap. J. Malac. 20 (2): pl. 21, fig. 10 (*nomen nudum*).

1959. *Mitra (Scabricola) takiisaoi* Kuroda, Jap. J. Malac. 20 (4): 326.

1970. *Neocancilla takiisaoi* (Kuroda), Cernohorsky, Bull. Auckland Inst. Mus. 8: 78, pl. 7, fig. 12.

TYPE LOCALITY: Hachijo-jima, Izu-shichito I, Japan.

DISTRIBUTION: From Japan to Taiwan, New Caledonia and Pitcairn Island, Kermadec Is (new record).

Material examined: Raoul I, Kermadec Is (NMNZ No. MF-2839, 1 specimen without additional data). BS 435, 29°19.1'S, 177°54.6'W, S.E. D'Arcy Pt., Raoul I, 70 m; 1 specimen.

N. takiisaoi is a rare subtidal species whose exact distribution is still imperfectly known. The radula (Fig. 7) confirms the generic placement of *takiisaoi* in *Neocancilla*.

Genus *Ziba* H. & A. Adams, 1853

Ziba H. & A. Adams, 1853, Gen. Rec. Moll. 1: 179. Type species by SD (Wenz, 1943) *Mitra carinata* Swainson, 1824. Recent, West Africa.



Figs. 5-10. 5. *Cancilla strangei* (Angas), Raoul I, Kermadec Is, 85 m; length 23.6 mm. 6, 7. *Neocancilla takiisaoi* (Kuroda). 6. Raoul I, Kermadec Is; length 44.0 mm. 7. Radula of *N. takiisaoi*. 8-10. *Ziba cernohorskyi* Rehder & Wilson. 8. Smooth form from between Dayrell and Chanter I, Kermadec Is, 31-45 m; length 22.5 mm. 9. Strongly sculptured form from E. of Smith Bluff, Raoul I, Kermadec Is, 40-47 m; length 27.2 mm. 10. Radula of *Z. cernohorskyi*.

The radulae of the type-species of *Cancilla* and *Ziba* are still unknown and it is difficult to decide at this stage whether *Ziba* is closer to *Cancilla* or *Mitra*. For this reason *Ziba* is tentatively used in a generic sense.

***Ziba cernohorskyi* Rehder & Wilson, 1975**

(Figs. 8-10)

1975. *Ziba cernohorskyi* Rehder & Wilson, *Smithson. Contrib. Zool.* No. 203: 13, col. pl. fig. 13 (shell), textfig. 9 (radula).

TYPE LOCALITY: Off N.W. corner of Pitcairn Island, 44-45 fathoms (82-101 m).

Material examined: Raoul I, Kermadec Is (NMNZ No. MF-27219, 1 specimen without additional data). BS 436, 29°18.5'S, 177°54.5'W, S.E. D'Arcy Pt., Raoul I, 44 m; 3 specimens. BS 573, 29°15'S, 177°50.9'W, between Dayrell and Chanter I, Raoul I, 31-45 m; 2 specimens. BS 576, 29°18.1'S, 177°56.3'W, E. of Smith Bluff, Raoul I, 40-47 m; 1 specimen. BS 579, 29°14'S, 177°59.3'W, N.W. Hutchison Bluff, Raoul I, 38 m; 1 specimen.

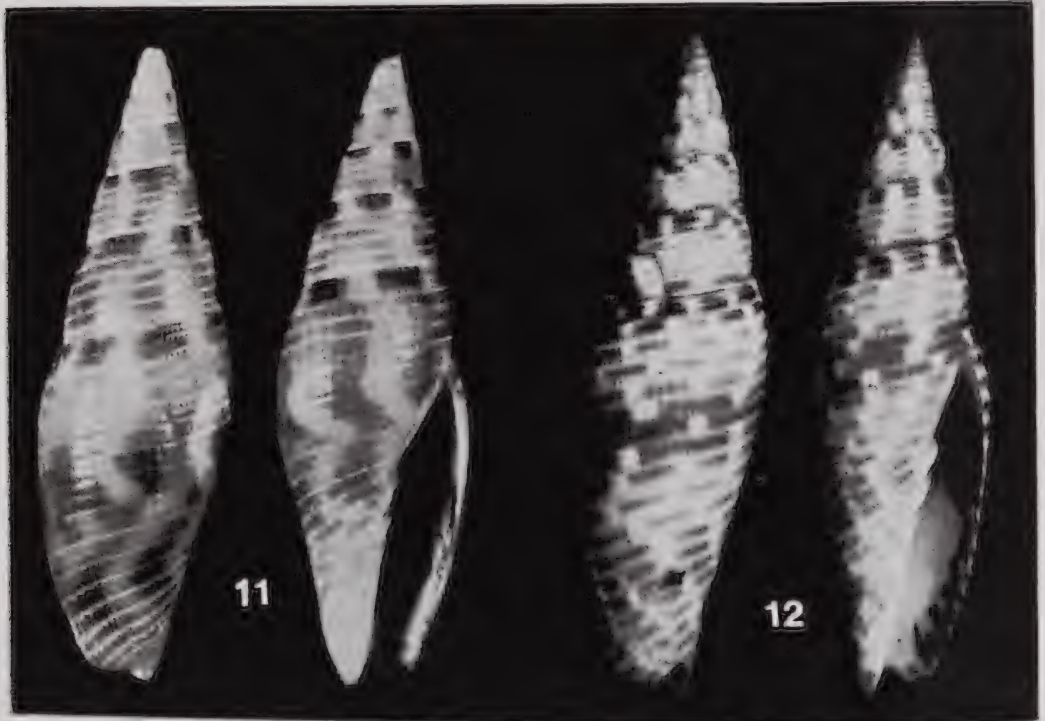
The species is very variable in sculpture, some individuals display the same type of discreet sculpture as the unique holotype from Pitcairn I, while a specimen from Smith Bluff, Raoul I, has a decussated pattern of axially oriented, low granules. The largest Kermadec I specimen measures 34.2 mm in length. The radula of the Kermadec I specimen is extremely similar to that of the Pitcairn I holotype.

***Ziba cf. rehderi* (Webb, 1958)**

(Figs. 11, 12)

1958. *Mitra rehderi* Webb, *Jap. J. Malac.* 20 (1): 30, textfigs. 1, 2.

TYPE LOCALITY: Tosa, Japan, 90-100 fathoms (165-183 m).



Figs. 11, 12. *Ziba cf. rehderi* (Webb). 11. S.E. Chanter I, Raoul I, Kermadec Is. 512-585 m; length 24.3 mm (young specimen). 12. Holotype of *Z. rehderi* (Webb), USNM No. 622597, length 44.6 mm.

Material examined: BS 440, 29°16'S, 177°49.3'W, S.E. Chanter I, Raoul I, 512-585 m; 1 specimen. BS 581, 29°14'S, 177°52.8'W, N.W. Napier I, Raoul I, 530-567 m; 1 specimen.

The Kermadec Is species is known by 1 very worn, stained and broken specimen and another immature individual. Both specimens have the same sculpture as *Z. rehderi*, which consists of 6 flat spiral cords and intermediate spiral grooves which are pitted or indented by short axial lirae. The generic position of *rehderi*, as well as the species occurrence in the Kermadec Is require confirmation. The holotype of *Z. rehderi* is in the Smithsonian Institution No. USNM 622597, length 44.6 mm (Fig. 12).

***Ziba kermadecensis* sp. n.**

(Figs. 13-17)

Shell moderate in size for a mitrid, 22.6-31.6 mm in length, fusiformly-elongate, width 32%-35% of length, rather solid, teleconch of 9 flat-sided or only slightly convex whorls, protoconch missing in all specimens examined. Early mature whorls are finely nodulose, nodulose sculpture usually persisting to the penultimate whorl and the posterior region of the body whorl; some individuals, however, with a distinctly granulose body whorl, penultimate whorl with 4-6 spiral rows of fairly regular nodules, nodules on body whorl either confined to 4-6 rows below the suture and followed by wide-spaced, punctate spiral grooves or the complete body whorl has axially elongated nodules, siphonal fasciole with 7-12 oblique spiral cords. Aperture narrow, equal in height or longer than the spire, 51%-59% of length, outer lip moderately thickened and scalloped, wall of outer lip smooth, columella with 3-4 (usually 4) strong, oblique folds, siphonal notch distinct. Brown in colour, sutures broadly banded with white, brown zones with a few small, nebulous and slightly wedge-shaped white spots; some individuals, however, lack the white spots.

Radula similar to *Ziba bacillum* (Lamarck), rachidians with 6 strong cusps, lateral tooth twice the width of rachidian and with 7 strong cusps which become progressively smaller towards the end of the lateral (Fig. 17).

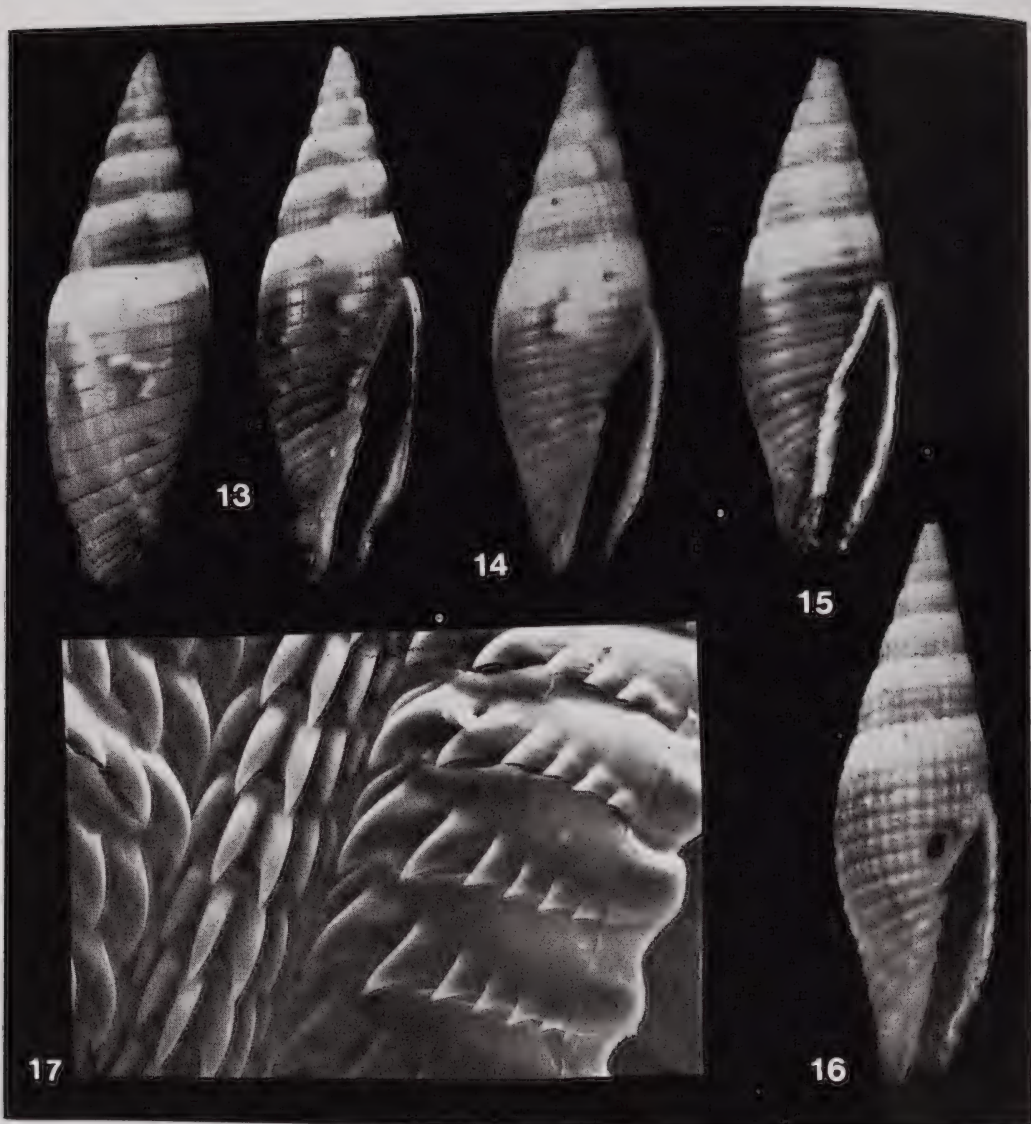
TYPE LOCALITY: BS 438, 29°14.7'S, 177°49.4'W, S.E. Nugent I, Raoul I, Kermadec Is. 146-165 m (*leg.* 28-10-1975).

Holotype: In NMNZ No. MF-30804, length 31.6 mm, width 10.0 mm, height of aperture 18.5 mm (Fig. 13).

Paratypes: No. 1 from type-locality in NMNZ No. MF-25659 (live-taken specimen which has been holed to facilitate removal of radula — Fig. 14) and paratype No. 2 from the type-locality in the Auckland Institute and Museum (AIM). Paratypes No.'s 3-6 from BS 437, 29°11.9'S, 177°56.2'W, N.W. Fleetwood Bluff, Raoul I, 154 m; in NMNZ No. MF-25410 and paratype No. 7 from the same locality in AIM. Paratypes No.'s 8-9 from BS 572, 29°18.9'S, 177°56.4'W, S.E. Smith Bluff, Raoul I, 82-100 m, in NMNZ No. MF-26588. Paratype No. 10 from BS 570, 29°14.7'S, 177°50.3'W, E. Dayrell I, Raoul I, 135-146 m in NMNZ No. MF-26630.

The smooth form of the species as exemplified by the holotype bears a superficial resemblance to *Scabricola* (*Swainsonia*) *ocellata* (Swainson, 1831) in features of coarsely sculptured spire-whorls, wide-spaced spiral grooves on the body whorl and colour ornamentation. The radular anatomy of *S. (S.) ocellata* is so obviously different that *ocellata* is rightfully assigned to a different genus (Cernohorsky 1970: 18, fig. 112).

Z. kermadecensis is highly variable in sculpture, particularly on the body whorl where the wide-spaced, punctate spiral grooves become spiral cords or even granules in some individuals.



Figs. 13-17. *Ziba kermadecensis* sp. n. Raoul I, Kermadec Is.. 13. Holotype NMNZ No. MF-30804, length 31.6 mm (grooved form). 14. Paratype, length 30.8 mm. 15. Paratype, length 25.8 mm (corded form). 16. Paratype, length 27.9 mm (granulose form). 17. Radula.

Family COSTELLARIIDAE

Genus *Vexillum* Roeding, 1798

Vexillum Roeding, 1798, Mus. Bolten. p. 138. Type species by SD (Woodring, 1928) *V. plicatum* Roeding, 1798 = *Voluta plicaria* Linnaeus, 1758. Recent, Indo-Pacific.

Subgenus *Costellaria* Swainson, 1840

Vexillum (*Costellaria*) *sculptile* (Reeve, 1845)

(Fig. 18)

1845. *Mitra sculptilis* Reeve, Conch. Icon. pl. 35, sp. 290.

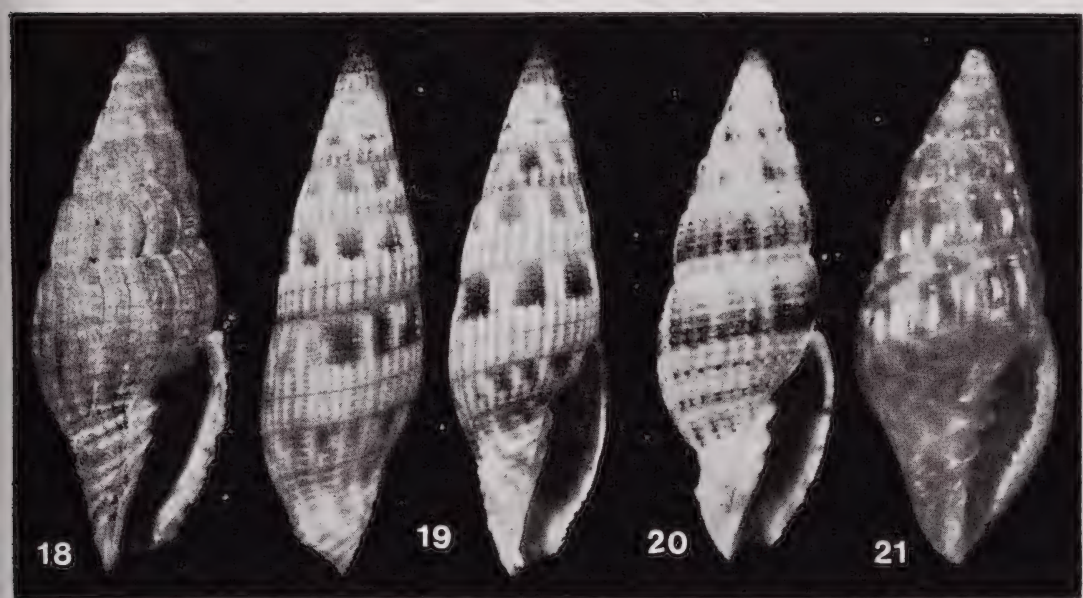
1853. *Mitra delicata* A. Adams, Proc. Zool. Soc. Lond. Pt. 19: 137; 1908 Hedley, Proc. Linn. Soc. N.S.W. 33 (3): 484, pl. 7, fig. 1 (figd. syntype).

1918. *Mitra (Pusia) iteina* Melvill, Ann. Mag. Nat. Hist. (9), 1: 141, pl. 4, fig. 7.
 TYPE LOCALITY: Ticao I, Philippines (*sculptile*); Cape York, Australia, 8 fathoms (15 m) (*delicata*); Henjam I, Persian Gulf, 10 fathoms (18 m) (*iteina*).

DISTRIBUTION: From the Red Sea and the Persian Gulf to New Britain and Queensland, Australia. Kermadec Is (new record).

Material examined: BS 441, 29°15.5'S, 177°50'W, E. Chanter I, Raoul I, 366-402 m: 1 specimen. BS 572, 29°18.9'S, 177°56.4'W, S.E. Smith Bluff, Raoul I, 82-100 m: 1 specimen.

V. (C.) sculptile is moderately frequent in dredgings. The Kermadec I record is a considerable eastward extension from Cape Moreton, Queensland and New Britain.



Figs. 18-21. *Vexillum (Costellaria) sculptile* (Reeve), E. Chanter I, Raoul I, Kermadec Is, 366-402 m; length 11.1 mm. 19. *V. (C.) angustissimum* (E. A. Smith), off Meyer I, Raoul I, Kermadec Is, 22-27 m; length 13.5 mm. 20. *V. (C.) iredalei* (Powell), East Anchorage, Raoul I, Kermadec Is, 42-47 m; length 16.9 mm. 21. *Microvoluta royana* (Iredale), E. Chanter I, Raoul I, Kermadec Is, 366-402 m; length 9.7 mm.

***Vexillum (Costellaria) castum* (H. Adams, 1872)**

1872. *Turricula (Thala) casta* H. Adams, Proc. Zool. Soc. Lond. p. 9, pl. 3, fig. 2.

1874. *Mitra hastata* Sowerby, Thes. Conchyl. 4: 35, pl. 27, fig. 620 (*nom. subst. pro Turricula casta* H. Adams, 1872) [*non Mitra hastata* Karsten, 1849].

TYPE LOCALITY: Red Sea.

DISTRIBUTION: From the Red Sea and the Persian Gulf to the Society and Hawaiian Islands. Kermadec Is (new record).

Material examined: BS 441, 29°15.5'S, 177°50'W, E. Chanter I, Raoul I, 366-402 m: 1 specimen.

V. (C.) castum is an uncommon, subtidal species. *Mitra hastata* Sowerby, 1874, which is a primary homonym of *M. hastata* Karsten, 1849, is a superfluous substitute name for *Turricula casta* H. Adams, which has never been a primary or secondary homonym.

Vexillum (Costellaria) angustissimum (E. A. Smith, 1903) (Fig. 19)
 1903. *Mitra angustissima* E. A. Smith, Faun. Geog. Mald. & Laccad. Archip. 2 (2): 605, pl. 35, fig. 5.

TYPE LOCALITY: Maldive Is, Indian Ocean.

DISTRIBUTION: From the Red Sea to the Tonga Islands, Kermadec Is (new record).

Material examined: BS 442, 29°14.7'S, 177°52.7'W, off Meyer I, Boat Harbour, Raoul I, 22-27 m; 7 specimens. BS 567, 29°16'S, 177°51.5'W, East Anchorage, Raoul I, 42-47 m; 2 specimens.

The species is moderately common in dredgings. Its occurrence in the Kermadec Is is not too surprising since the species is known from Fiji, Tonga and Norfolk Island.

Vexillum (Costellaria) iredalei (Powell, 1958) (Fig. 20)

1958. *Mitropifex iredalei* Powell, Rec. Auckland Inst. Mus. 5 (1/2): 81, pl. 9, fig. 3.

TYPE LOCALITY: Off Raoul I, Kermadec Is, 75-85 m.

Material examined: BS 567, 29°16'S, 177°51.5'W, East Anchorage, Raoul I, 42-47 m; 9 specimens. Raoul I, Kermadec Is (3 specimens without additional data). BS 572, 29°18.9'S, 177°56.4'W, S.E. Smith Bluff, Raoul I, 82-100 m; 1 specimen. BS 579, 29°14'S, 177°59.3'W, N.W. Hutchison Bluff, Raoul I, 38 m; 1 specimen.

The species is moderately frequent in dredgings and appears to be endemic to the Kermadec Islands.

Family VOLUTOMITRIDAE

Genus *Microvoluta* Angas, 1877

Microvoluta Angas, 1877, Proc. Zool. Soc. Lond. p. 34. Type species by M *M. australis* Angas, 1877. Recent, S.E. Australia.

Microvoluta royana Iredale, 1924 (Fig. 21)

1924 *Microvoluta royana* Iredale, Proc. Linn. Soc. N.S.W. 49 (3): 269, pl.35, fig. 13; 1966 Garrard, J. Malac. Soc. Australia 10: 5; 1970 Cernohorsky, Bull. Auckland Inst. Mus. 8: 122, pl. 15, fig. 13 figd. holotype).

1951. *Mitra jervisensis* Laseron, Rec. Austral. Mus. 22 (4): 341, textfig. 4.

TYPE LOCALITY: off Green Cape, N.S.W., Australia, 50-70 fathoms (92-128 m) *royana*; Jervis Bay, N.S.W., Australia, 15 fathoms (27 m) (*jervisensis*).

Material examined: BS 441, 29°15.5'S, 177°50'W, E. Chanter I, Raoul I, 366-402 m; 6 specimens and 4 fragments.

All Kermadec Is specimens have been dredged dead and all suffered damage in some way.

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